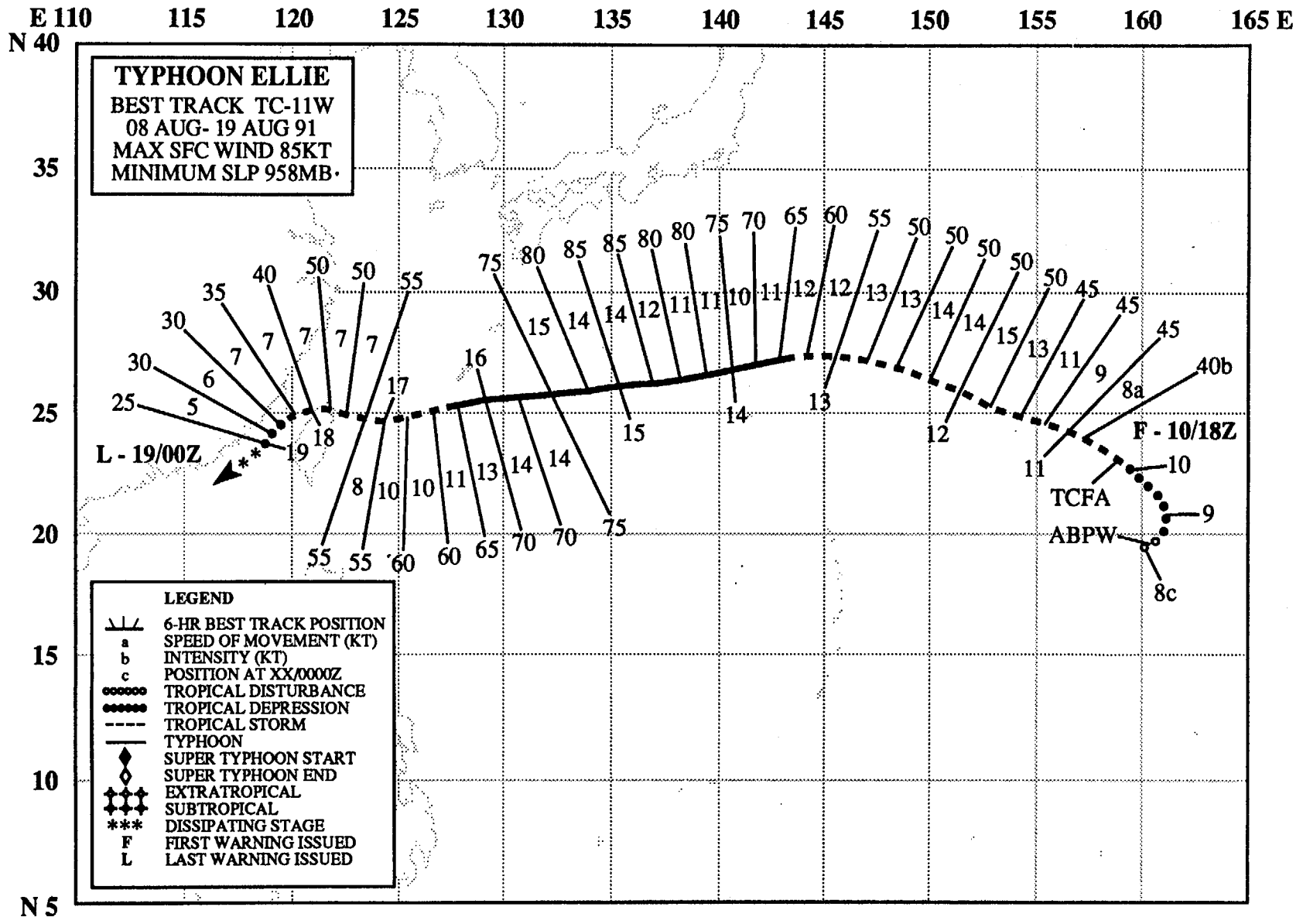

TYPHOON ELLIE
BEST TRACK TC-11W
08 AUG- 19 AUG 91
MAX SFC WIND 85KT
MINIMUM SLP 958MB
E 110
115
120
125
130
135
140
145
150
155
160
165 E
N 40
35
30
25
20
15
10
N 5
L - 19/00Z
F - 10/18Z
TCFA
ABPW
LEGEND
6-HR BEST TRACK POSITION
a SPEED OF MOVEMENT (KT)
b INTENSITY (KT)
c POSITION AT XX/0000Z
TROPICAL DISTURBANCE
TROPICAL DEPRESSION
TROPICAL STORM
TYPHOON
SUPER TYPHOON START
SUPER TYPHOON END
EXTRATROPICAL
SUBTROPICAL
*** DISSIPATING STAGE
F FIRST WARNING ISSUED
L LAST WARNING ISSUED

TYPHOON ELLIE (11W)

I. HIGHLIGHTS

The second tropical cyclone of August, Typhoon Ellie, formed as part of a larger NSS monsoon gyre (Lander, 1992) a day after Doug (10W) formed. Ellie, also the second midget typhoon of 1991, maintained a generally westward track 2400 nm (4440 km) across the western North Pacific from just west of Wake Island to Taiwan.

II. TRACK AND INTENSITY

After its initial counter-clockwise orbit of the center of the larger NSS monsoon gyre on 8 and 9 August, Ellie tracked westward, embedded in the mid-level flow south of the axis of a narrow subtropical ridge. Instead of recurving immediately behind Doug (10W), Ellie took a more westerly track as increased subsidence behind the passing mid-tropospheric trough associated with Doug (10W) caused ridging between the two tropical cyclones. Later, after crossing northern Taiwan and losing its central convection, the midget's residual vortex was carried southwestward with the low-level flow.

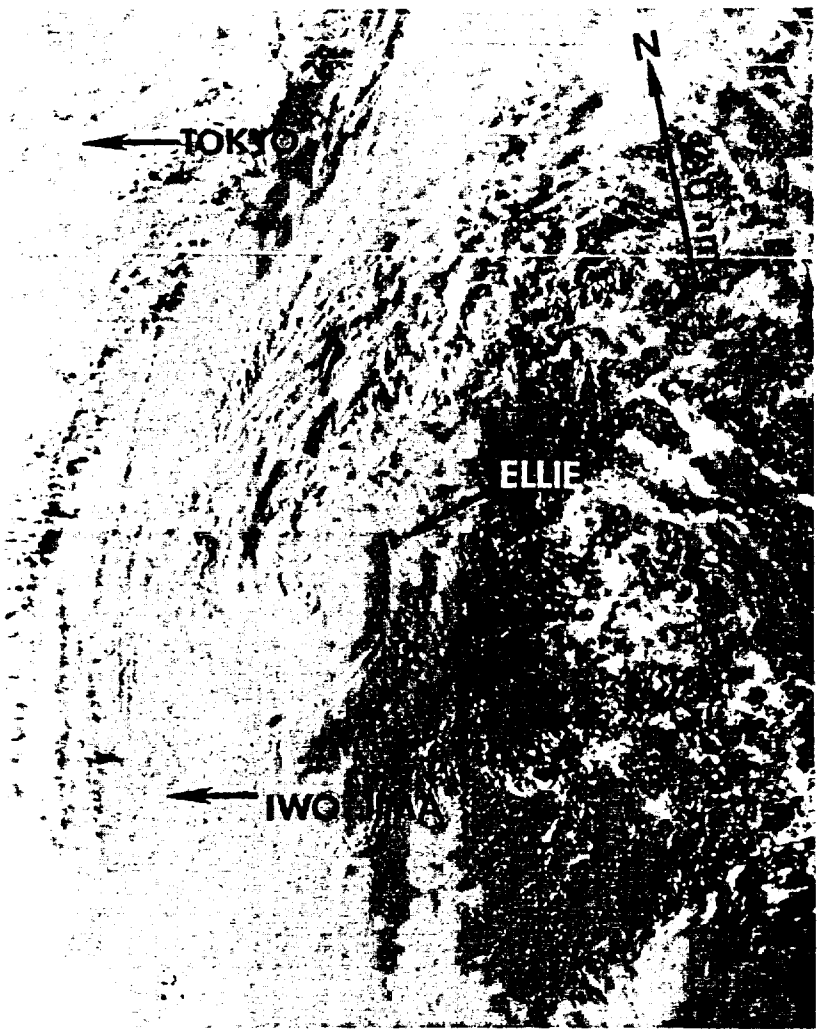


Figure 3-11-1. Ellie is upgraded to a typhoon as it develops a visible eye (130838Z August DMSP visual imagery).

Ellie developed as a weak disturbance between Wake Island and Minami-Tori Shima, and was first mentioned on the 080600Z Significant Tropical Weather Advisory. Visual satellite imagery at 100300Z showed that Ellie's central dense overcast (CDO) was very compact, and was associated with a low-level circulation. Synoptic data at the same time included a 25 kt (13 m/sec) wind report and a 1002 mb surface pressure nearby. Based on these data, JTWC issued a Tropical Cyclone Formation Alert at 100500Z. The first warning followed at 101800Z, and the system was upgraded to tropical storm intensity at 110000Z. The post analysis showed that this midget system actually had a central dense overcast and estimated winds of 35 kt (18 m/sec) at 100600Z. Ellie reached typhoon intensity at 131200Z (Figure 3-11-1) and later peaked at 85 kt (44 m/sec) at 141800Z (Figure 3-11-2). As Ellie began to weaken, the

concentration and organization of the tropical cyclone's small CDO began to fluctuate. Increasing vertical shear and interaction with the mountainous island of Taiwan led to Ellie's demise and subsequent dissipation over water in the Taiwan Strait on 19 August.

III. FORECAST PERFORMANCE

The forecast aids, CLIM, CLIPER, AND HPAC, consistently called for recurvature (Figure 3-11-3). Initially, the dynamic and statistical-dynamical aids also favored a northwestward track through the subtropical ridge. As a result JTWC's forecasts initially reflected a recurvature scenario. Nevertheless Ellie moved south of the forecast break in the ridge and tracked to the west. Once the typhoon passed this weak bifurcation point, the dynamic models adopted an under-the-ridge scenario. Still, they sensed a weak ridge and, unable to account for the small size of the typhoon, continued to indicate that Ellie's track would gain latitude. In keeping with this dynamic guidance, JTWC's forecasts also provided predictions to the right of the verifying final best track. After the tropical cyclone moved southwest of Okinawa, and approximately 72 hours prior to dissipation, the dynamic aids began to sense the ridging over Asia and their track guidance moved closer to the actual track (Figure 3-11-4).

IV. IMPACT

Although Ellie persisted for over a week, threatened Okinawa, the southern Ryukyu Islands, northern Taiwan and maritime interests along the way, no reports of significant damage or fatalities were received.

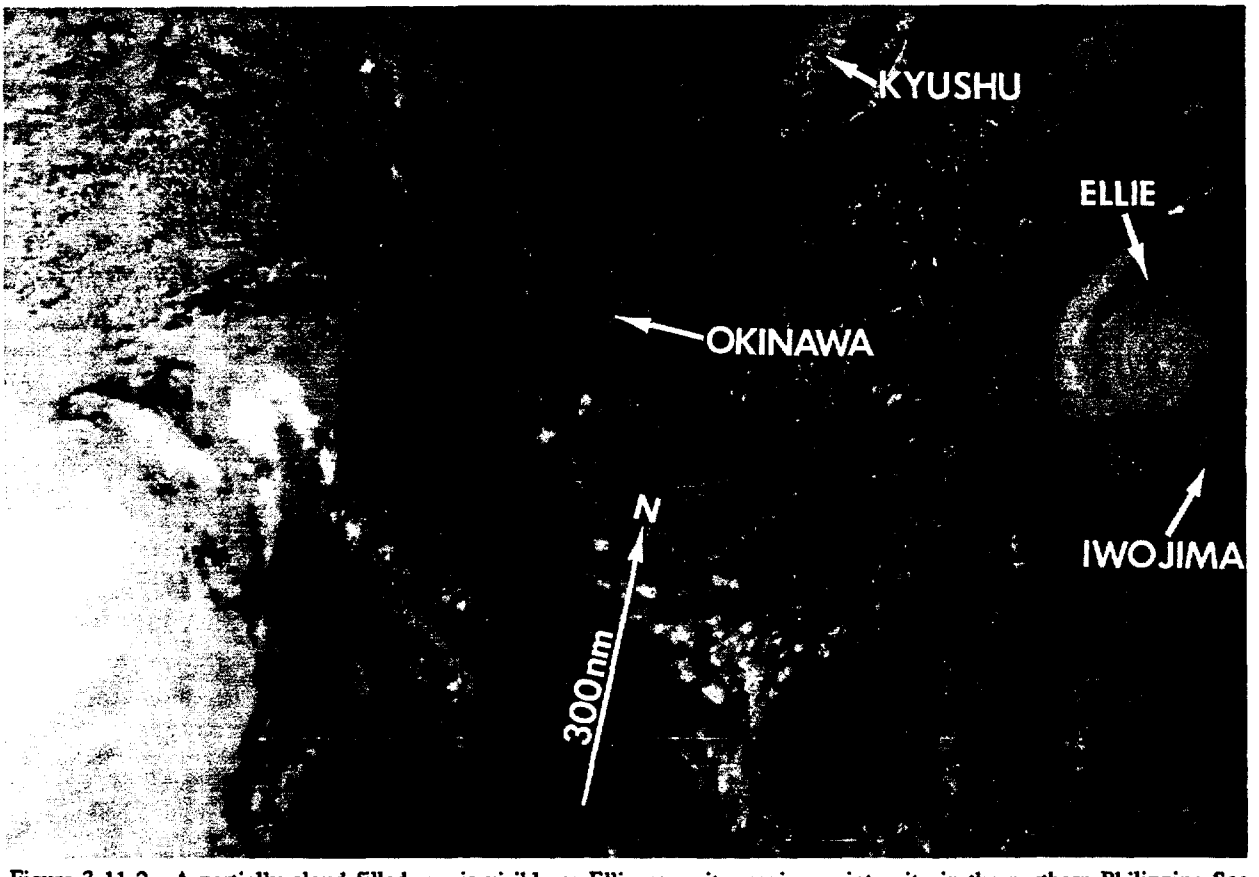
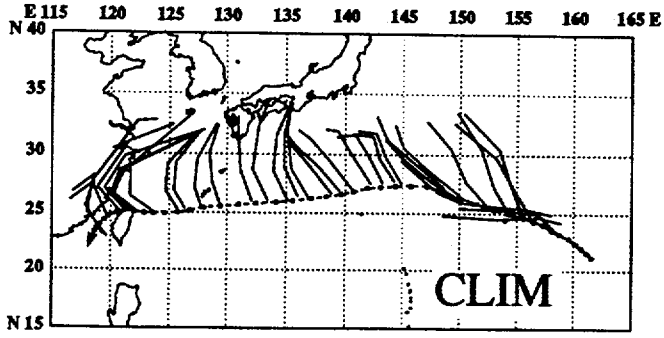
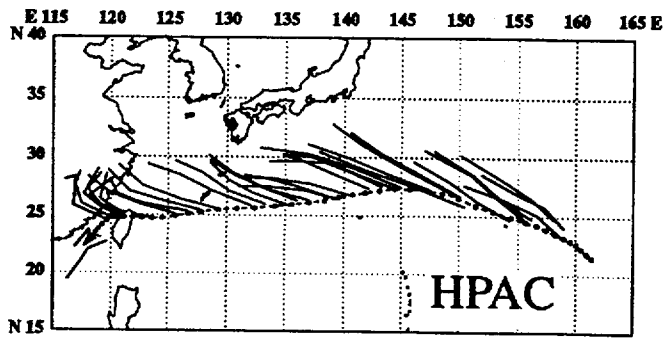


Figure 3-11-2. A partially cloud filled eye is visible as Ellie nears its maximum intensity in the northern Philippine Sea (140537Z August NOAA visual imagery).





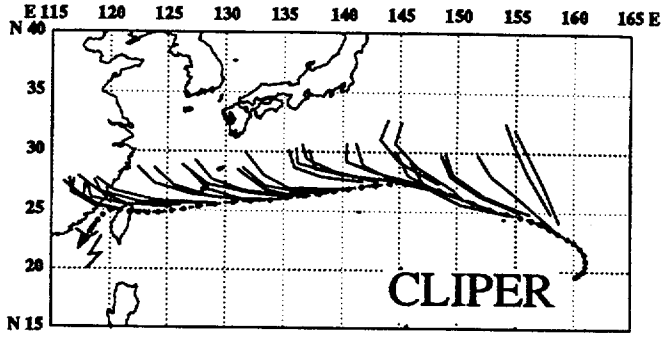
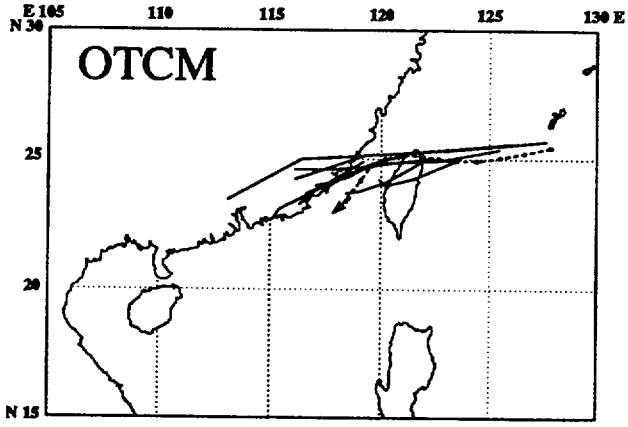
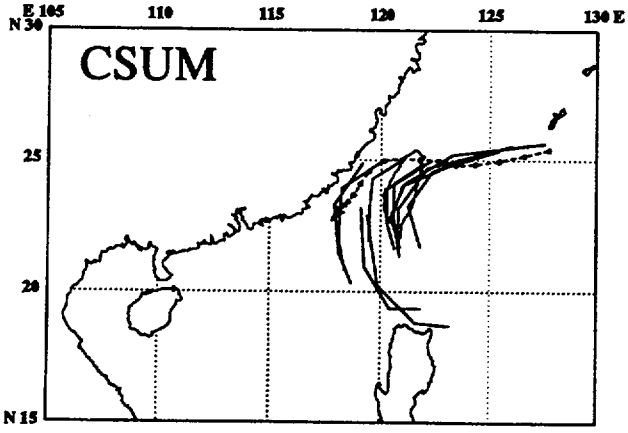


Figure 3-11-3. Climatological and statistical track guidance for Ellie (clockwise from top left): CLIMatology (CLIM), Half Persistence And Climatology (HPAC), CLImatology and PERsistence (CLIPER). These aids were consistently to the right of the verifying best track.





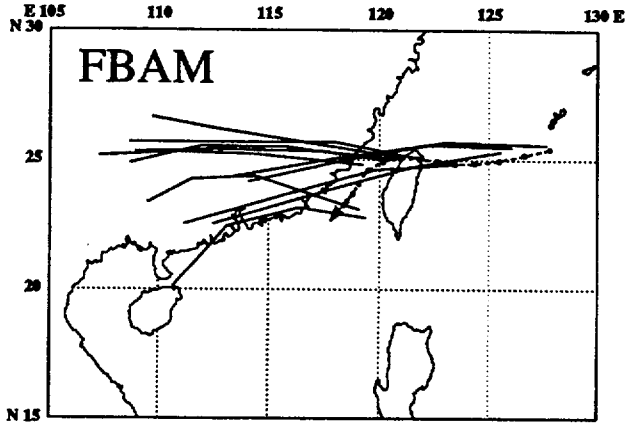


Figure 3-11-4. Objective guidance from the One-way Tropical Cyclone Model (OTCM) , FNOC Beta and Advection Model (FBAM) , and the Colorado State University Model (CSUM) correctly indicates westward to southwestward tracks after 160600Z as Ellie passed to the southwest of Okinawa.